

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-3 and 7 and the specie *Spinosum* in the reply filed on 06/04/2009 is acknowledged. The traversal is on the ground(s) that all of the pending claims are directed to manufacturing pulp from Rhodophyta as a base material and therefor have unity of invention and there is not search burden. This argument is found persuasive and the restriction requirement mailed on 05/07/2009 is withdrawn. All of the claims have been examined.

In view of the above noted withdrawal of the restriction requirement, applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Drawings

The drawings filed 05/04/2006 are accepted by the examiner.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided

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by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Sungho Hong on 8/14/09.

The application has been amended as follows:

IN THE CLAIMS:

Claims 7 and 20 have been canceled.

Claims 1-6 have been replaced by the following:

-- 1. A method of manufacturing pulp from *Rhodophyta* containing agar, comprising:

immersing *Rhodophyta* in an extraction solvent capable of dissolving agar for a predetermined time period sufficient to dissolve the agar in the extraction solvent; converting the dissolved agar into a fiber by reacting the dissolved agar with a reaction solvent that is different from the extraction solvent; curing the fiber with a curing agent that is an aldehyde to produce a cured fiber; and
pulping the cured fiber to produce a pulp.

2. The method according to claim 1, wherein the conversion into the fiber is performed by continuously extruding the agar solution into the reaction solvent using an extrusion nozzle.

3. The method according to claim 1, wherein the conversion into the fiber is performed by

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intermittently extruding the agar solution into the reaction solvent using a spray nozzle.

4. A method of manufacturing pulp from *Rhodophyta* containing agar, comprising:

immersing *Rhodophyta* in an extraction solvent capable of dissolving agar for a predetermined time period sufficient to dissolve the agar in the extraction solvent thereby leaving a pulp material remaining after the agar is extracted from

Rhodophyta;

collecting the pulp material by removing the extraction solvent; and

pulping the pulp material to produce a pulp.

5. A method of manufacturing pulp from *Rhodophyta* containing agar, comprising:

immersing *Rhodophyta* in an extraction solvent capable of dissolving the agar for a predetermined time period sufficient to dissolve only a portion of the agar in the extraction solvent thereby leaving a pulp material including a remaining portion of agar remaining after the portion of the agar is extracted from *Rhodophyta*;

collecting the pulp material by removing the extraction solvent;

curing the pulp material with a curing agent that is an aldehyde; and

pulping the cured pulp material to produce a pulp.

6. The method according to claim 5, wherein the dissolution of the portion of the agar in the extraction solvent is performed by immersing *Rhodophyta* in an alcohol-based solvent while boiling the alcohol-based solvent. --

Claims 8-10 have been replaced by the following:

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-- 8. The method according to claims 1 or 5, wherein the curing agent comprises glyoxal.

9. The method according to claims 1, 4 or 5, wherein the extraction solvent is used at a temperature of 80°C or higher.

10. The method according to claims 1, 4 or 5, wherein the extraction solvent comprises any one selected from water, alcohols, and ketones. --

Claims 12-16 have been replaced by the following:

-- 12. The method according to claim 11, wherein the reaction solvent comprises alcohols or ketones.

13. The method according to claims 1, 4 or 5, further comprising chipping *Rhodophyta*, followed by immersion in the extraction solvent.

14. The method according to claims 1, 4 or 5, wherein *Rhodophyta* is selected from *Gelidium amansii*, *Gracilaria vetrucosa*, *Cottonii*, *Spinosum*, and combinations thereof.

15. A pulp manufactured from *Rhodophyta* according to claims 1, 4 or 5.

16. A method of manufacturing paper, comprising:

preparing pulp manufactured using *Rhodophyta* according to claims 1, 4 or 5 and manufacturing paper using the pulp. --

Claim 18 has been replaced by the following:

-- 18. A method of manufacturing paper, comprising:

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preparing pulp manufactured using *Rhodophyta* according to claims 1, 4 or 5;
preparing wood pulp;
mixing the two pulps; and
manufacturing paper using the pulp mixture obtained from the mixing step. --

The following is an examiner's statement of reasons for allowance: The closest prior art is Thami et al. (US 5,596,936), Nicolucci et al. (US 5,472,569) and Sakai et al. (US 5,500,086; cited in the DIS filed 5/4/06). Thami et al. teach a method for obtaining agar-agar by obtaining agar from seaweed, dehydrating it and extruding it (abstract).

Nicolucci et al. teach a method of making a cellulose fiber for manufacturing paper by washing algal material with an water, draining the water, treating the material with an anti-fermentative to prevent putrefaction, grinding the algal material, refining the ground material to particles and mixing the algal material particle with cellulose to make paper (abstract).

Sakai et al. teach producing pulp from algae by bleaching from the *Closterium* or *Plurotaenium* genera and making paper thereof (abstract; claims).

None of the references teach extraction of the agar from *Rhodophyta* making a fiber from the agar, curing the fiber and pulping the cured fiber to produce a pulp. Neither do the references teach extracting the agar from *Rhodophyta* to obtain a pulp material and pulping it to make a pulp. Neither do the references. teach extracting a portion of the agar from *Rhodophyta* to obtain a pulp material including a remaining

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portion of agar, curing the pulp material and pulping the pulp material to produce a pulp. Said references do not disclose making paper from any of said pulps obtained therein.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN HANLEY whose telephone number is (571)272-2508. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Sandra Saucier/
Primary Examiner, Art Unit 1651

/Susan Hanley/
Examiner, Art Unit 1651